

## PATENT ABSTRACTS OF JAPAN

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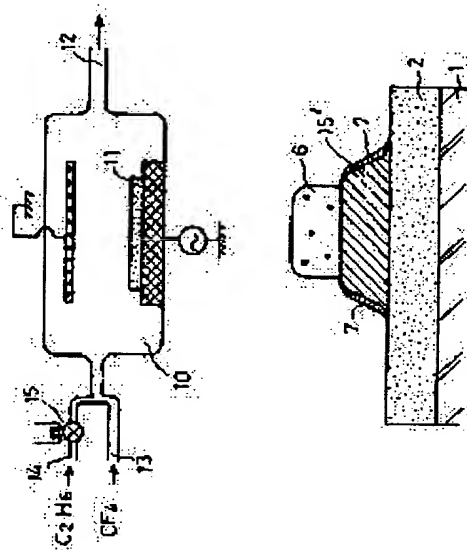
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## (54) ETCHING METHOD OF POLYCRYSTALLINE SILICON FILM

## (57)Abstract:

PURPOSE: To obtain a side surface of Si film pattern in the desired side wall shape by increasing or decreasing a partial pressure of ethane gas when executing the active ion etching to a polycrystalline Si film with the mixed gas of fluoric gas and ethane gas.

CONSTITUTION: A resist film 6 of the specified pattern is provided on the polycrystalline Si film 5 deposited on a semiconductor substrate 1 and the film 5 is etched as follow using said resist film as the mask. A sample 11 is put into an etching chamber 10 having the exhaust port 12 at the one end and CF<sub>4</sub> gas inflow port 13 and C<sub>2</sub>H<sub>6</sub> inflow port 14 at the other end and electrodes are disposed on the sample 11 with the specified interval. With such structure, a degree of opening or closing of electromagnetic valve 15 provided at the inflow port 14 is controlled automatically with a microcomputer and thereby the CF<sub>4</sub> gas pressure is kept constant to 0.2Torr. Meanwhile, the ethane gas is first set to 0.1Torr and is gradually reduced to 0 and then it is reset to the initial pressure. Thereby, a polymer film 7 generated at the side surface of film 5' as described above is shaped as desired.



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